successively accessing the locations in the first queue at a rate corresponding to a cell transmission rate;

if the accessed location in the first queue contains an index, transmitting the corresponding data cell, freeing the accessed location, and rewriting the index at a location in the first queue that is distant from the accessed location in the first queue by a value determined by the rate of the corresponding transmission;

successively accessing the locations in the second queue; and

if the accessed location in the second queue contains an index, transmitting the corresponding data cell when the accessed location in the first queue does not contain an index, freeing the accessed location in the second queue and rewriting the index at a location in the second queue that is distant from the accessed location in the second queue by a value determined by the rate of the corresponding transmission.

20. A method as defined in claim 19, wherein the index is rewritten in the first queue at a distance from the accessed location that is inversely proportional to the rate of the corresponding transmission.

21. A method as defined in claim 19, further comprising:

associating a first cell pointer with the first queue and a second cell pointer with the second queue;

incrementing each cell pointer when the respective accessed location is not occupied;

incrementing one of the cell pointers when the corresponding data cell is transmitted; and

not incrementing the second cell pointer when the accessed locations in the first and second queues are both occupied.

22. A method as defined in claim 21, wherein the first and second cell pointers are incremented at different rates that correspond to the passbands assigned to the types of connections associated with the first and second queues.

A1 0 23.   A method as defined in claim 19, further comprising:

writing a ghost index into at least one of the locations in the first queue; and

if the accessed location in the first queue contains a ghost index, freeing the accessed location and rewriting the ghost index in the first queue at a random distance from the accessed location.

CONT 24.   A method as defined in claim 19, further comprising:

interrupting the accessing of the first queue when the number of indexes in the first queue reaches a predetermined limit; and

resuming the accessing of the first queue when a rate pointer is incremented.

25.   A method as defined in claim 24, further comprising incrementing the rate pointer by N locations at the transmission rate of N cells.

26.   A method as defined in claim 19, further comprising:

interrupting the accessing of the first queue when a location indicated by a rate pointer is reached; and

incrementing the rate pointer by N locations at the transmission rate of N cells.

27.   A method for controlling rates of concurrent digital transmissions, comprising:

using at least first and second queues, each having a plurality of locations;

for each transmission, writing an index corresponding to a data cell of the transmission in one of the locations in the first queue or the second queue;

successively accessing the locations of the first queue at a higher rate than a cell transmission rate;

successively accessing the locations of the second queue;

if the accessed location in the first queue contains an index, transmitting the corresponding data cell, freeing the accessed location, and rewriting the index at a location in the first queue that is distant from the accessed location by a predetermined value;

interrupting the accessing of the first queue when a location indicated by a rate pointer is reached; and

incrementing the rate pointer by N locations at the transmission rate of N cells.

28.   A method as defined in claim 27, further comprising, if the accessed location in the second queue contains an index, transmitting the corresponding data cell when the accessed location in the first queue does not contain an index or when the accessing of the first queue is interrupted.

29.   A method as defined in claim 27, further comprising writing into the first queue indexes corresponding to relatively high priority transmissions and writing into the second queue indexes corresponding to relatively low priority transmissions.

30.   A method as defined in claim 27, further comprising:

interrupting the accessing of the first queue when the number of indexes in the first queue reaches a predetermined limit; and

resuming the accessing of the first queue when the rate pointer is incremented.

31.   A method for controlling rates of concurrent digital transmissions, comprising:

using a queue having a plurality of locations;

for each transmission, writing an index corresponding to a data cell of the transmission at one of the locations in the queue;

successively accessing the locations of the queue at a rate corresponding to a cell transmission rate;

if the accessed location in the queue contains an index, transmitting the corresponding data cell, freeing the accessed location, and rewriting the index at a location in the queue that is distant from the accessed location by a value determined by the rate of the corresponding transmission;

writing a ghost index into at least one of the locations in the queue; and

if the accessed location in the queue contains a ghost index, freeing the accessed location and rewriting the ghost index in the queue at a random distance from the accessed location.

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32.   Apparatus for controlling rates of concurrent digital transmissions, comprising:

a memory having defined therein at least first and second queues, each having a plurality of locations; and

a controller including:

means, for each transmission of relatively high priority, for writing an index corresponding to a data cell of the relatively high priority transmission in one of the locations in the first queue;

means, for each transmission of relatively low priority, for writing an index corresponding to a data cell of the relatively low priority transmission in one of the locations in the second queue;

means for successively accessing the locations in the first queue at a rate corresponding to a cell transmission rate;

means, if the accessed location in the first queue contains an index, for transmitting the corresponding data cell, for freeing the accessed location and for rewriting the index at a location in the first queue that is distant from the accessed location in the first queue by a value determined by the rate of the corresponding transmission;

means for successively accessing the locations in the second queue; and

means, if the accessed location in the second queue contains an index, for transmitting the corresponding data cell when the accessed location in the first queue does not contain an index, for freeing the accessed location in the second queue and for rewriting the index at a location in the second queue that is distant from the accessed location in the second queue by a value determined by the rate of the corresponding transmission.

33.   Apparatus as defined in claim 32, wherein the index is rewritten in the first queue at a distance from the accessed location that is inversely proportional to the rate of the corresponding transmission.

34.   Apparatus as defined in claim 32, wherein the controller further comprises:

means for associating a first cell pointer with the first queue and a second cell pointer with the second queue;

means for incrementing each cell pointer when the respective accessed location is not occupied;

means for incrementing one of the cell pointers when the corresponding data cell is transmitted; and

means for not incrementing the second cell pointer when the accessed locations in the first and second queues are both occupied.

35.   Apparatus as defined in claim 34, wherein the first and second cell pointers are incremented at different rates that correspond to the passbands assigned to the types of connections associated with the first and second queues.

36.   Apparatus as defined claim 32, wherein the controller further comprises:

means for writing a ghost index into at least one of the locations in the first queue; and

means, if the accessed location in the first queue contains a ghost index, for freeing the accessed location and for rewriting the ghost index in the first queue at a random distance from the accessed location.

37.   Apparatus as defined in claim 32, wherein the controller further comprises:

means for interrupting the accessing of the first queue when the number of indexes in the first queue reaches a predetermined limit; and

means for resuming the accessing of the first queue when a rate pointer is incremented.

38.   Apparatus as defined in claim 37, wherein the controller further comprises means for incrementing the rate pointer by N locations at the transmission rate of N cells.

39.   Apparatus for controlling rates of concurrent digital transmissions, comprising:

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a memory having defined therein at least first and second queues, each having a plurality of locations; and

a controller including:

means, for each transmission, for writing an index corresponding to a data cell of the transmission in one of the locations in the first queue or the second queue;

means for successively accessing the locations of the first queue at a higher rate than a cell transmission rate;

means for successively accessing the locations of the second queue;

means, if the accessed location in the first queue contains an index, for transmitting the corresponding data cell, for freeing the accessed location, and for rewriting the index at a location in the first queue that is distant from the accessed location by a predetermined value;

means for interrupting the accessing of the first queue when a location indicated by a rate pointer is reached; and

means for incrementing the rate pointer by N locations at the transmission rate of N cells.

40.   Apparatus as defined in claim 39, wherein the controller further comprises, means, if the accessed location in the second queue contains an index, for transmitting the corresponding data cell when the accessed location in the first queue does not contain an index or when the accessing of the first queue is interrupted.

41.   Apparatus as defined in claim 39, wherein the controller further comprises means for writing into the first queue indices corresponding to relatively high priority transmissions and for writing into the second queue indices corresponding to relatively low priority transmissions.

42.   Apparatus as defined in claim 39, wherein the controller further comprises:

means for interrupting the accessing of the first queue when the number of indexes in the first queue reaches a predetermined limit; and

means for resuming the accessing of the first queue when the rate pointer is incremented.